



PATENT
Attorney Docket No. 72978

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): LI et al.)
Appln No.: 10/075,105)
Filed: February 13, 2002)
For: A BI-DIRECTIONAL DUAL PROMOTER)
COMPLEX WITH ENHANCED)
PROMOTER ACTIVITY FOR TRANSGENE)
EXPRESSION IN EUKARYOTES)
Group Art)
Unit: 1645)
Examiner: Not Yet Known)

CERTIFICATE OF MAILING

I hereby certify that this paper is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on this date.

08/19/02

Date

James P. Krueger

Registration No. 35, 234

Attorney for Applicant(s)

TRANSMITTAL OF FORMAL DRAWINGS

Box MISSING PARTS
Commissioner of Patents and Trademarks
ATTENTION: Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

To correct informalities in the drawings as noted in the Notice to File Missing Parts of Nonprovisional Application dated April 18, 2002, Applicants submit herewith formal drawings (Figure 1 -27 on 37 sheets) for this application. The two-month period of response set in the Notice of Missing Parts expired on June 18, 2002, as a result this submission includes a two-month Petition for Extension of Time.

Respectfully submitted,
FITCH, EVEN, TABIN & FLANNERY

By:
James P. Krueger
Registration No. 25,747

Date: August 19, 2002
120 South LaSalle Street
Suite 1600
Chicago, IL 60603-3406
Telephone: (312) 577-7000
Facsimile: (312) 577-7007



1/37

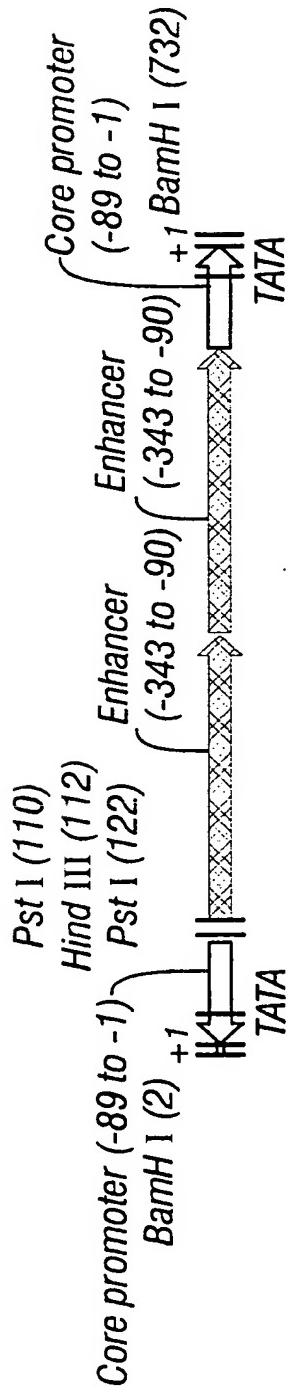


FIG. 1



BamHI

1 GGATCCAGCG TGTCCTCTTAAATGAAATG AACTCCCTTA TATAGAGGA GGGTCTTGC AAGGATAGTG GGATTGTGCG
CCTAGGGTGC ACAGGAGGG TTTACTTAC TTGAAGGAAT ATATCTCCTT CCCAGAACGC TTCTATCAC CCTAACACGC

PstI HindIII PstI

81 TCATCCCCTA CGTCAGTGGAGATACTGCAG AAGCTCTGC AGTGAGACTT TTCAACAAG GGTAAATATCG GGAACCTCC
AGTAGGGAAAT GCAGTCACCT CTATGACGTC TTCAAGACG TCACTCTGAA AAGTTGTTTC CCATTATAGC CCTTTGGAGG

161 TCGGATTCCA TTGCCCGAGCT ATCTGTCACT TCATCAAAG GACAGTAGAA AAGGAAGGTG GCACCTACAA ATGCCATCAT
AGCCTAAGGT AACGGGTGCA TAGACAGTGA AGTAGTTTC CTGTCACTTT TTCCCTCCAC CGTGGATGTT TACGGTAGTA

241 TGCCTAAAG GAAAGGCTAT CGTTCAAGAT GCCTCTGCCG ACAGTGGTCC CAAAGATGGA CCCCAACCCA CGAGGAGCAT
ACGCTATTC CTTCCGATA GCAAGTTCTA CGGAGACGGC TGTCAACAGG GTTCTACCT GGGGGTGGGT GCTCCTCGTA

321 CGTGGAAAAA GAAGACGTTCAACCACGTC TTCAAAGCAA GTGGATTGAT GTGATTGAG TGAGACTTTT CAACAAAGGG
GCACCTTTT CTTCTGCAAG GTTGGTGCAG AAGTTTCGTT CACCTAACTA CACTAACGTC ACTCTGAAA GTTGTGTTCC

401 TAATATCGGG AACACCTCCTC GGATTCCATT GCCCAGGTAT CTGTCACTTC ATCAAAGGA CAGTAGAAAA GGAAGGTGGC
ATTATAGCCC TTGGAGGA CCTAAGGTAA CGGGTCGATA GACAGTGAAG TAGTTTTCT GTCATCTTTT CCTTCCACCG

481 ACCTACAAAT GCATCAATG CGATAAAGGA AAGGCTATCG TTCAAGATGCTCTGCCGAC AGTGGTCCAC AAGATGGACC
TGGATGTTTA CGGTAGTAAC GCTATTCTCTT GCTCGATAGC AAGTTGCTG GAGACGGCTG TCACCAAGGT TTCTACCTGG

2/37

FIG. 2A



3/37

561 CCCACCCACG AGGAGGCATCG TGAAAAAGA AGACGTTCCA ACCACGTCTT CAAAGCAAGT GGATTGATGT GATATCTCCA
GGTTGGGTGC TCCTCGTAGC ACCTTTCT TCTGCAAGGT TGTTGCAGAA GTTTCGTTCA CCTAACTACA CTATAGAGGT

641 CTGACGTAAG GGATGACGCA CAATCCACT ATCCTTCGCA AGACCCTTCC TCTATAAG GAAGTTTCAATT TCATTTGGAG
GACTGCATTC CCTACTGCGT GTTACGGGTAGA TAGGAAGGAGG AGATATATTCTTCAAGTAA AGTAAAACCTC

BamHI

721 AGGACACGGCT GGATCC Seq. ID No. 1
TCCTGTGGAA CCTAGG Seq. ID No. 2

FIG. 2B

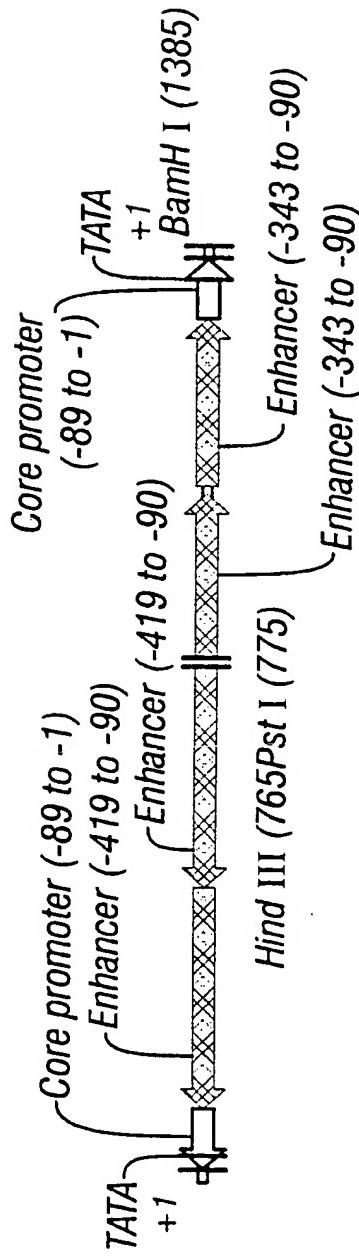


FIG. 3



SnaBI

Seq. ID No. 3

1 TACGTACAGC GTGTCCTCTC CAAATGAAT GAACTTCCTT ATATAGAGGA AGGGTCTTGC GAAGGATAGT GGGATTGTGC

Seq. ID No. 4

ATGCATGTCG CACAGGAGAG GTTTACTTTA CTTGAAGGAA TATATCTCCCT TCCCAGAACG CTTCCTATCA CCCTAACACG

81 GTCATCCCTT ACGTCAGTGG AGATATCACA TCCATCCACT TGCTTTGAAG ACGTGGTGG AACGTCCTCT TTTTCCACGA
CAGTAGGGAA TGCAGTCACC TCTATAGTGT AGTTAGGTGA AGCAGAACTTC TGCACCAACC TTGCAGAAGA AAAAGGGTGC

161 TGCTCCTCGT GGGTGGGGGT CCATCTTGG GACCACTGTC GGCAAGGGCA TCTTCAACGA TGGCCTTTCC TTTATCGCAA
ACGAGGAGCA CCCACCCCCA GGTAGAAACC CTGGTGACAG CGGTCTCCGT AGAAGTTGCT ACCGGAAAAGG AAATAGCGTT

241 TGATGGCATT TGTAGGAGCC ACCTTCCTT TCCACTATCT TCACAATAAA GTGACAGATA GCTGGGCAAT GGAATCCGAG
ACTACCGTAA ACATCCTCGG TGGAAAGAAA AGGTGATAGA AGTGTATTTC CACTGTCTAT CGACCCGTTA CCTTAGGGCTC

321 GAGGTTTCCG GATATTACCC TTTGTTGAAA AGTCTCAATT GCCCTTTGGT CTTCTGAGAC TGTATCTTGG ATATTTTGG
CTCCAAAGGC CTATAATGGG AAACAACTTT TCAGAGTTAA CGGGAAACCA GAAGACTCTG ACATAGAAAC TATAAAAC

401 AGTAGACAAAG TGTGTCGTGC TCCACCATGT TGATTACAT CAATCCACTT GCTTGTAAAGA CGTTGTGGAA AGTCTCTTCTT
TCATCTGTC ACACAGCAG AGGTGGTACA ACTAAGTGTAA GTTAGGTGAA CGAAACTCT GCACCAACCT TGCGAGAAGAA

481 TTTCCACGAT GCTCCTCGTG GGTGGGGTC CATCTTGGG ACCACTGTGC GCAGAGGCAT CTTCAACGAT GGCTTTCTC
AAAGGTGCTA CGAGGAGCAC CCACCCCCAG GTAGAAAACCC CGTGTGACAGC CGTCCTCGTA GAAGTTGCTA CGGAAAGGA

4/37

FIG. 4A



- 561 TTATCGCAAT GATGGCATT GTAGGAGCCA CCTTCCTTTT CCACTATCTT CACATAAG TGACAGATAG CTGGCAATG
AATAGCGTTA CTACCGTAA CATCCCTCGGT GGAAGGAAAA GGTGTATGAA GTGTATTTC ACTGTCTATC GACCCGGTAC
- 641 GAATCCGAGG AGGTTTCCGG ATATTACCTT TTGTTGAAAA GTCTCAATTG CCCTTGGTC TTCTGAGACT GTATCTTTGA
CTTAGGCTCC TCCAAAGGCC TATAATGGGAA AACAACCTTT CAGAGTTAAC GGGAAACCAG AAGACTCTGA CATAGAAACT
- HindIIIPstI
- 721 TATTTTGG A TAGACAAGT GTGTCGTGCT CCACCATGTT GATAAGCTTC TGCA GTGAGCTTC TGCA GTGAGCTTC TGCA
ATAAAAACCT CATCTGTTCA CACAGCACGA GGTTGGTACAA CTATTGAA ACgttca GAGTCACTCT GAAAAGTTGT TTCCCATTAT
- 801 TCGGGAAACC TCCCTGGATT CCATTGCCCA GCTATCTGTC ACCTTCATCAA AAGGACAGTA GAAAAGGAAG GTGGCACCTA
AGCCCTTGG AGGAGCCTAA GGTAACGGGT CGATAGACAG TGAAGTAGTTT TTCCCTGTCTAT CTTTCCCTTC CACCGTGGAT
- 881 CAAATGCCAT CATTGCGATA AAGGAAAGGC TATCGTTCAA GATGCCTCTG CCGACAGTGG TCCCAAAAGAT GGACCCCCAC
GTTTACGGTA GTAACGCTAT TTCCCTTCCG ATAGCAAGTT CTACGGAGAC GGCTGTCACT AGGGTTCTA CCTGGGGGTG
- 961 CCACGGAG CATTGCGAA AAAGAAAGACG TTCCAACCCAC GTCTTCAAAG CAAGTGGATT GATGTGATTG CAGTGAGACT
GGTGTCTCTC GTAGCACCTT TTCTTCTGC AAGGTTGGTG CAGAAGTTTC GTTCCACCTAA CTACACTAAAC GTCACTCTGA
- 1041 TTTCAACAAA GGGTAATACTC GGGAAACCTC CTGGGATTCC ATTGCCAGC TATCTGTCTAC TTCAATCAAAA GGACAGTGA
AAAGTTGTTT CCCATTAG CCCTTGGAG GAGCCTAAGG TAACGGGTCTG ATAGACAGTG AAGTAGTTT CCTGTCTACT
- 1121 AAAGGAAGGT GGCACCTACA AATGCCATCA TTGGGATAAA GGAAAGGCTA TCGTTCAAGA TGCCTCTGCC GACAGTGGTC
TTTCCTTCCA CGGTGGATGT TTACGGTAGT AACGCTATT CCCTTCCGAT AGCAAGTTCT ACGGAGACGG CTGTCAACAG

5/37

FIG. 4B



1201 CCAAAGATGG ACCCCCACCC ACGAGGAGCA TCGTGGAAAA AGAAGACGT CCAACCACGT CTTCAAAGCA AGTGGATTGA
GGTTTCTACC TGGGGGTGGG TGCTCCTCGT AGCACCTTT TCTTCTGCAA GGTTGGTGC A GAAGTTTCGT TCACCTAACT

1281 TGTGATATCT CCACTGACGT AAGGGATGAC GCACAATCCC ACTATCCTTC GCAAGAACCT TCCTCTATA AGGAAGTTC
ACACTATAGA GGTGACTGCA TTCCCTACTG CGTGTAGGG TGATAGGAAG CGTTCTGGGA AGGAGATATA TTCCCTCAAG

6/37

FIG. 4C

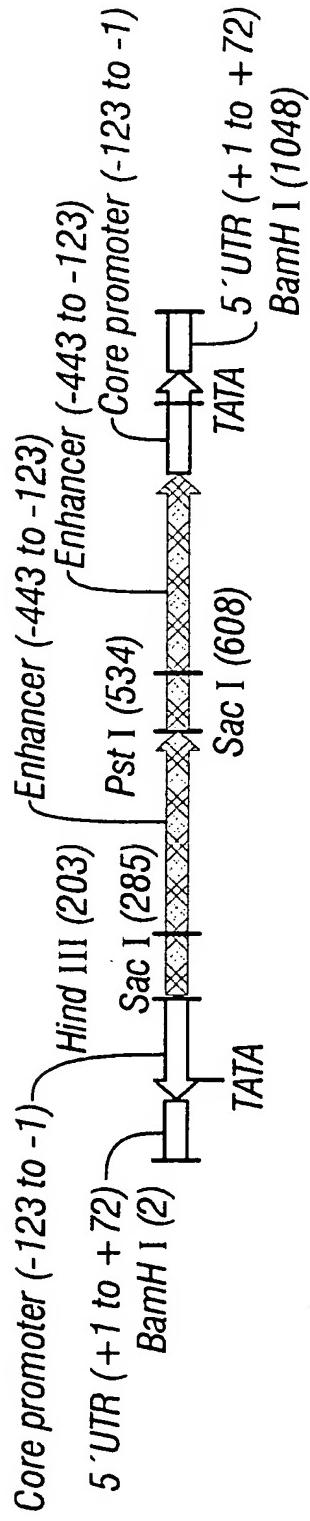


FIG. 5



BamHI

1 GGATCCACAA ACTTACAAAT TTCTCTGAAG TTGTATCCTC AGTACTCCTA AGAAAATAGC TTACACCAA TTTCCTTG CCTAGGGTT TGAATGTTA AAGAGACTTC AACATAGGAG TCATGAAGTT TCTTTTATCG AATGTGGTTT AAAAGAAC

81 TTTTCACAAA TGCCGAACCTT GGTTCCTTAT ATAGGAAAC TCAAGGGCAA AAATGACACG GAAAATAAA AAAGGATAAG AAAAGTGTGTT AGGGCTTGA CCAAGGAATA TATCCTTTG AGTTCCCGTT TTTACTGTGC CTTTTATAT TTTCCTATTTC

HindIII

161 TAGTGGGGA TAAGATTCCCT TTGTGATAAG GTTACTTTCC GAAGCTTCCA GAAGGTAATT ATCCAAGATG TAGCATCAAG ATCACCCCCCT ATTCTAAGGA AACACTATT CAATGAAAGG CTTCGAAGGT CTTCCATTAA TAGGTTCTAC ATCGTAGTTC

SacI

241 AATCCAATGT TTACGGAAA AACTATGGAA GTATTATGTG AGCTCAGCAA GAAGCAGATC AATATGGGC ACATATGCAA TTAGGTTACA AATGCCCTTT TTGATACCTT CATAATAACAC TGAGTCGTT CTCGTCAG TTATGCCG TGATACGTT

321 CCTATGTTCA AAAATGAAGA ATGTACAGAT ACAAGATCCT ATACTGCCAG AATACGAAGA AGAATACTGA GAAATTGAAA GGATAACAAGT TTTTACTTTCT TACATGTCTA TGTTCTAGGA TATGACGGTC TTATGCTCT TCTTATGCT CAT CTAAACTTT

401 AAGAAGAACCG AGGGGAAGAA AAGAATCTTG AAGACGTAAG CACTGACGAC AACATGAAA AGAAGAAGAT AGGGTCGGTG TTCTTCTTGG TCCGCTTCTT TTCTTAGAAC TTCTCTCTA TTCCAGGCCAC

7/37

FIG. 6A



PstI

481 ATTTGAAAG AGACATAGAG GACACATGTA AGGTGGAAAA TTGTAAGGGCT GCAGAAGGTA ATTATCCAAG ATGTTAGGCAT
TAACACTTC TCGTGTACAT TCCACCTTT ACATCCCCGA CGTCCTCCAT TAATAGGTTC TACATCGTAG

SacI

561 AAGAATCCAA TGTTTACGGG AAAACTATG GAAGTATTAT GTGAGGCTCAG CAAGAAGCAG ATCAAATATGC GGCACATATG
TTCTTAGGTT ACAAAATGCC CTTTGTATAC CTTCTATAA CACTCGAGTC GTTCTTCGTC TAGTTATAC CGGTGTATAAC

641 CAACCTATGT TCAAAAATGA AGAATGTACA GATACAAGAT CCTATACTGC CAGAATACGA AGAAGAATAC GTAGAAATTG
GTTGGATACA AGTTTTACT TCTTACATGT CTATGTTCTA GGATATGACG GTCTTATGCT TCTTCTTATG CATCTTTAAC

721 AAAAGAAGA ACCAGGGCAA GAAAAGAATC TTGAAGAACGT AAGGCACTGAC GACACAATG AAAAGAAGAA GATAAGGTG
TTTTTCTTCT TGGTCCGCTT CTTTCTTAG AACTTCTGCA TTTCGTGACTG CTGTTGTTAC TTTTCTCTT CTATTCCAGC

801 GTGATTGTGA AAGAGACATA GAGGACACAT GTAAGGTGGA AAATGTAAGG GCGGAAAGTA ACCTTATCAC AAAGGAATCT
CACTAACACT TTCTCTGTAT CTCCTGTGA CATTCCACCT TTACATTCC CGCCCTTCAT TGAATAGTG TTTCCTTGA

881 TATCCCCAC TACTTATCCC TTTATATTT TCCGTGTCAT TTTTGGCCCTT GAGTTTCCCT ATATAAGGAA CCAAGTTGG
ATAGGGGTG ATGAATAGGA AAATATAAA AGGCACAGTA AAAACGGAA CTCAAAAGGA TATATTCCCTT GGTTCAAGGC

961 CATTGTGAA ACAAGAAAA AATTGGGT AAGCTATTTT CTTTGAAGTA CTGAGGATAAC AACCTCAGAG AAATTTGTA
GTAAACACTT TTGTTCTTT TAAACCACA TTGATAAAA GAAACTTCAT GACTCCTATG TTGAAGTCTC TTAAACATT

8/37

FIG. 6B



9/37

BamHI

1041 GTTTGGAT CC Seq. ID No. 5
 CAAACACCTA GG Seq. ID No. 6

FIG. 6C

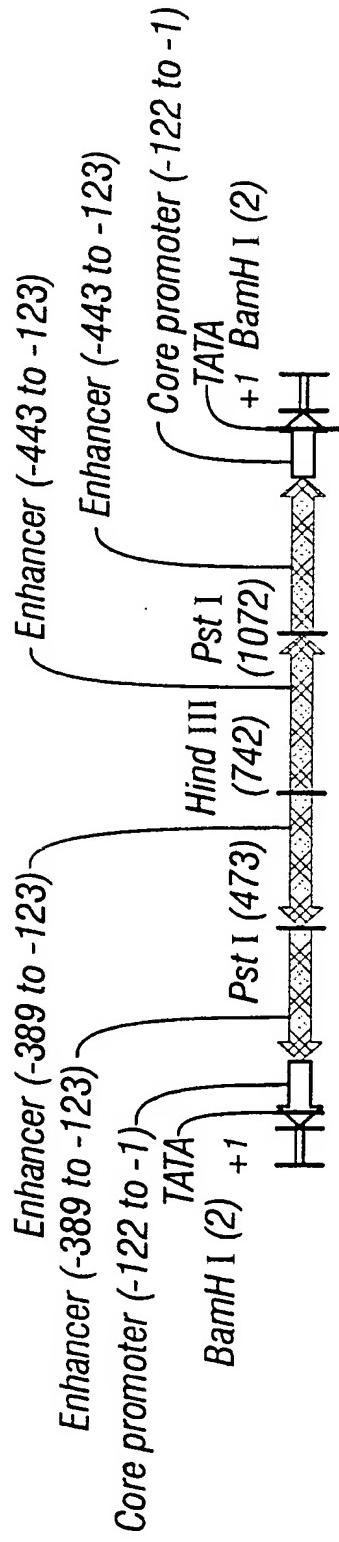


FIG. 7



BamHI

1 GGATCCACAA ACCTTACAAAT TTCTCTGAAG TTGTATCCTC AGTACTTCAA AGAAAATAGC TTACACCAA TTTTTCTTG CCTAGGTGTT TGATGTTAACAGACTTC AACATAGGAG TCATGAAGT TCTTTATCG AATGTGGTT AAAAAGAAC

81 TTTTCACAAA TGGCGAACTT GGTTCCTTAT ATAGGAAAC TCAAGGGCAA AAATGACACG GAAAATATA AAAGGATAAG AAAAGTGTGTT AGGGCTTGA CCAAGGAATA TATCCTTTG AGTTCGGTT TTTACTGTGC CTTTTATAT TTTCCTATTC

161 TAGTGGGGA TAAGATTCCCT TTGTGATAAG GTTACTTTCC GCCTTACAT TTTCACCTT ACATGTGTCCTCTCATGTC ATCACCCTCT ATTCTAAGGA AACACTATTC CAATGAAAGG CGGGGATGTA AAAGGTGGAA TGTACACAGG AGATACAGAG

241 TTTCACAATC ACCGACCTTA TCTTCTCTT TTCAATTGTTG TGTCAAGTGC TTACGTCTTC AAGATTCTTT TCTTCGCCCTG AAAGTGTGTTAG TGCTGGAAT AGAAGAAGAA AAGTAACAAAC AGCAGTCAGG AATGAGAAAG TTCTAAGAAA AGAAGCGGAC

321 GTTCTTCCTT TTCAATTCTC ACGTATTCTT CTTCGTATTTC TGCGAGTATA GGATCTTGTA TCTGTACATT CTTCATTTT CAAGAAGAAA AAGTAAAGA TGCATAAGAA GAAGCATAAG ACCGTCAAT CCTAGAACAT AGACATGTAAGAAGTAA GAAGTAAAAA

SacI PstI

401 GAACATAGGT TGCATATGTG CCGCATATTG ATCTGCTTCT TGCTGAGCTC ACATAATACT TCCATAGCTG CAGCCCTTAC CTTGTATCCA AGTATAACAC GGCGTATAAC TAGACGAGA AGCACTCGAG TGTATTATGA AGGTATCGAC GTCGGGAAATG

481 ATTTCCACCC TTACATGTGT CCTCTATGTC TCTTTCACAA TCACCGACCT TATCTTCTC TTTTCATTGT TGTGTCAGT TAAAGGTGG AATGTACACA GGAGATAACAG AGAAAGTGGT AGTGGCTGGA ATAGAAGAAG AAAAGTAACA ACAGCAGTCA

FIG. 8A

10/37



561 GCTTACGGTCT TCAAGATTCT TTTCTTCGCC TGGTTCTTCT TTTCAATT CTACGTATT CTCGCGAGTA
CGAATGCAGA AGTTCTAAGA AAAGAACGG ACCAAGAAGA AAAAGTTAA GATGCATAAG AAGAACATA AGACCGTAT

641 TAGGATCTTG TATCTGTACA TTCTCATTT TTGAACATAG GTTGCATATG TGCCGCATAT TGATCTGCTT CTTGCTGAGC
ATCCTAGAAC ATAGACATGT AAGAAGTAAA AACTTGTATC CAACGTATA ACGGCGTATA ACTAGACGAA GAACGACTCG

SacI HindIII

721 TCACATAATA CTTCCATAGG AAGCTTCAGA AGGTAATTAT CCAAGATGTA GCATCAAGAA TCCAATGTTT ACGGGGAAAAA
AGTGTATTAT GAAGGTATCC TTCAAGTCT TCCATTAATA GGTTCTACAT CGTAGTTCTT AGTTACAAA TGCCCCTTTT

SacI

801 CTATGGAAGT ATTATGTGAG CTCAGCAAGA AGCAGATCAA TATGCCGCAC ATATGCAACC TATGTTCAAA AATGAAGAAT
GATACCTTCA TAATACACTC GAGTCGTTCT TCGTCTAGTT ATACGCCGTG TATACTGTTG ATACAAGTTT TTACTCTTA

881 GTACAGATAAC AAGATCCTAT ACTGCCAGAA TACGAAGAAG AATACGTAGA AATTGAAAAA GAAGAACAG CGGAAGAAAA
CATGTCATG TTCTAGATA TGACGGTCTT ATGCTTCTTC TTATGCATCT TTAACCTTTT CTTCTGGTC CGCTTCTTTT

961 GAATCTTGAA GACGTAAGCA CTGACGACAA CAATGAAAAG AAGAAGATAA GGTGGTGT TGTGAAAGAG ACATAGAGGA
CTTAGAACTT CTGCAATTGGT GACTGCTGTT TTCTTCTATT CCAGCCACTA ACACTTTCTC TGTATCTCT

PstI

11/37

FIG. 8B



1041 CACATGTAAG GTGGAAAATG TAAGGGCTGC AGAAGGTAAT TATCCAAGAT GTAGCATCAA GAATCCAATG TTTACGGGA
GTGTACATT CACCTTTAC ATTCCCGACG TCTTCATTA ATAGGTTCTA CATGTAGTT CTTAGGTTAC AAATGCCCTT

SacI

1121 AAACATATGGA AGTATTATGT GAGGTCAGCA AGAAGCAGAT CAATATGCCG CACATATGCC ACCTATGTTCA AAAAATGAAG
TTTGATACCT TCATAATACA CTCGAGTCGT TCTTCGTCGA GTTATACGCC GTGTATACGT TGATACAAG TTTTACTTC

1201 AATG TACAGA TACAAGATCC TATACTGCCA GAATACGAAG AGAATACGT AGAAATTGAA AAAGAAGAAC CAGGGCGAAAGA
TTACATGTCAT ATGTTCTAGG ATATGACGGT CTTATGCTTC TTCTTATGCC TCTTTAACCT TTTCTTCTTG GTCCGGCTTC

1281 AAAGAACATCTT GAAGACGTAAC GCAACTGACGA CAACAATGAA AAGAAGAACAGA TAAGGTGGT GATTGTGAAA GAGACATAGA
TTCTTAGAA CTTCCTGCATT CGTGAECTGCT GTTGTACTT TTCTTCTTCT ATTCCAGGCC CTAACACTTT CTCTGTATCT

1361 GGACACATGT AAGGGTGGAAA ATGTAAGGGC GGAAAAGTAAC CTTATCACAA AGGAATCTTA TCCCCCACTA CTTATCCTT
CCTGTGTACA TTCCACCTTT TACATTCCCG CCTTTCTATTG GAATAGTGTTC CCCTTAAAT AGGGGGGTGAT GAATAGGAAA

1441 TATATTTTC CGTGTCAATT TTGCCCTTGA GTTTTCCAT ATTAGGAACC AAGTTCGGCA TTTGTGAAAA CAAGAAAAAA
ATATAAAAG GCACAGTAAA AACGGGAAC TAAAGGATA TATTCCCTGG TTCAAGCCGT AAACACTTTT GTTCTTTTT

BamHI

1521 TTGGGTGTAAG CTCATTTCTT TTGAAGTACT GAGGATACAA CTCAGAGAA ATTGTAAAGT TTGTGGATCC
AAACCACTT CGATAAAAGA AACTTCATGA CTCCATGTT GAAGTCTCTT TAAACATTCA AACACCTAGG

Seq. ID No. 7
Seq. ID No. 8

FIG. 8C



13/37

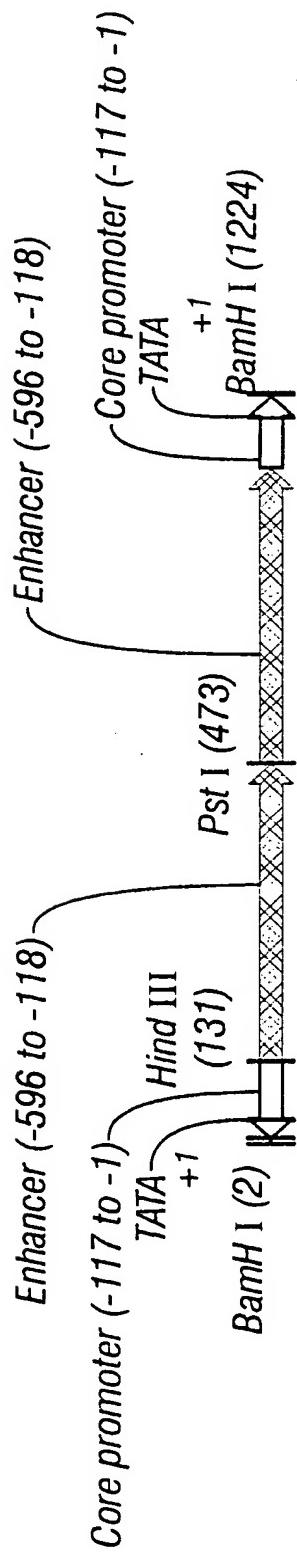


FIG. 9

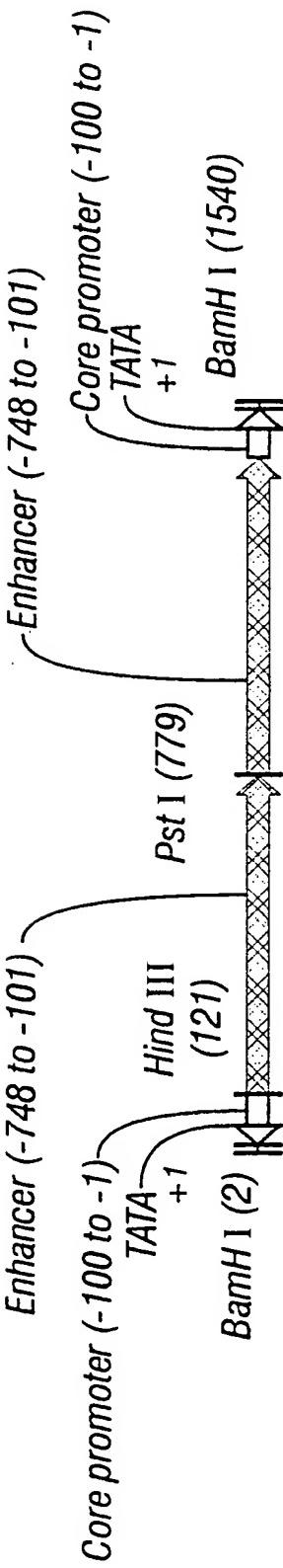


FIG. 11



BamHI

1 GGATCCCTTGT TTTCAAAGCG GAGGGAAA TATAATGAAATT TATATAGGCC GGTTTATCTC TTACAACCTT ATTTCGGCC
CCTAGGAACA AAAGTTCCGC CTCTCCCTTT ATATACCTAA ATATATCCGC CCAAATAGAG AATGTTGAAA TAAAAGCCGG

HindIII

81 TTTCAAAAAA ATAATTAAAA TCGACAGACA CGAACATCATT CGACCACAGA AGCTTCAACT ATTTTATGT ATGCAAGAGT
AAAGTTTTT TATTAATT TT AGCTGTCTGT GCTTAGTAAA GCTGGTTCTC TCGAAGTTGA TAAAATACA TAGTTTCTCA

161 CAGCATATGT ATAATTGATT CAGAATCGTT TTGACCGAGT CGGATGTAGT AGTAGCCATT ATTTAATGTA CATACTAATC
GTCGTATACA TATTAACTAA GTCTTAGCAA AACTGCTCAA GCCTACATCA TCATGGTAA TAAATTACAT GTATGATTAG

241 GTGAATAGTG ATATGATGAA ACATTGTATC TTATTGTATA AATATCCATA AACACATCAT GAAAGACACT TTCTTTACCG
CACTTATCAC TATACTACTT TGTAACATAG AATAACATAT TTATAGGTAT TTGTGTAGTA CTTCTGTGA AAGAAAAGTGC

321 GTCTGAATTA ATTATGATAAC AATTCTAATA GAAAAGGAAT TAAATTAGT TGAATTGTAT GAAATCTAAT TGAACAAAGCC
CAGACTTAAT TAATACTATG TTAAGATTAT CTTTGTCTTA ATTTAATGCA ACTTAACATA CTTTAGATTA ACTTGTTCGG

401 AACACAGACG AGGACTAACG TTGCCTGGAT TGACTCGGTT TAAGTTAACCC ACTAAAAAA CGGAGCTGTC ATGTAACACAG
TTGGTGCTGC TGCTGATTGC AACGGACCTA ACTGAGCCAA ATTCAATTGG TGATTTTTTT GCCTCGACAG TACATTGTGC

481 CGGATCGGAGC AGGTCAAGT CATGAAGCCA TCAAAGCAA AGAACTAATC CAAGGGCTGA GATGATTAAT TAGTTTAAA
GCCTAGGCTCG TCCAGTGTCA GTACTTCGGT AGTTTCGGT TCTTGATTAG GTTCCCGACT CTAATTAATCAAATT

14/37

PstI

~~~~~

**FIG. 10A**



15/37

561 ATTAGTTAAC ACGAGGGAAA AGGCTGTCTG ACAGGCCAGGT CACGTTATCT TTACCTGCAG CAACTATTT TATGTATGCA  
TAATCAATTG TGCTCCCTTT TCCGACAGAC TGTCGGTCCA GTGCAATAGA AATGGACGTC GTTGATAAAA ATACATAGT

641 AGAGTCAGCA TAGTATAAT TGATTAGAA TCGTTTGCAG GAGTTGGAT GTAGTAGTAG CCATTATTTA ATGTACATAC  
TCTCAGTCGT ATACATATTA ACTAAGTCTT AGCAAACGT CTCAGGCCTA CATCATCATC GGTAAATAAT TACATGTATG

721 TAATCGTGAA TAGTGTATG ATGAAACATT GTATCTTATT GTATAAATAT CCATAAACAC ATCATGAAAG ACACTTCTT  
ATTAGGCACTT ATCACTATAC TACTTTGTAA CATAAGATAA CATATTATAA GGTATTGTG TAGTACCTTC TGTAAGAA

801 TCACGGTCTG AATTAATTAT GATACAATTTC TAATAGAAAA CGAATTAAAT TACGGTGAAT TGTATGAAAT CTAATTGAAAC  
AGTGCAGAC TTAATTAATA CTATGTTAAG ATTATCTTTT GCCTTAATTAA ATGCAACTTA ACATACTTA GATTAACCTG

881 AAGCCAACCA CGACGACGAC TAACGGTGGCC TGGATTGACT CGGTAAAGT TAACCACTAA AAAAACGGAG CTGTCATGTA  
TTCGGTTGGT GCTGCTGCTG ATTGCAACGG ACCTAACTGA GCCAAATTCA ATTGGTGAATT TTTTGCTC GACAGTACAT

961 ACACGGGGAT CGAGCAGGTC ACAGTCATGA AGCCATCAA GCAAAAGAAC TAATCCAAGG GCTGAGATGA TTAATTAGTT  
TGTGCGCTA GCTCGTCCAG TGTCACT TCGGTAGTTT CGTTTCTTG ATTGGTCC CGACTCTACT AATTAATCAA

1041 TAAAAATTAG TAAACACGG GGAAAAGGCT GTCTGACAGC CAGGTACCGT TATCTTACCC TGTGGTGCAGA ATGATTGCG  
ATTTTAAATC AATTGTCCTC CCTTTCCGA CAGACTGTGCG GTCCAGTGCA ATAGAAATGG ACACCAAGCTT TACTAAGCAC

1121 TCTGTGATT TTAATTATT TTTGAAAGG CGAAAATAA AGTTGTAAGA GATAAACCCG CCTATATAAA TTCAATATATT  
AGACAGCTAA AATTAATAAA AAAACTTCC GGCTTTATT TCAACATTCT CTATTGGGC GGATATATT AAGTATAAA

BamHI

FIG. 10B



1201 TTCCCTCCG CTTGAAAC AAGGATCC  
AAGGAGGGC GAAACTTTC TTCCTAGG

Seq. ID No. 9  
Seq. ID No. 10

BamHI

1 GGATCCTTTT GGGTTTGGT GAGAACAAAG GAATAGTATG GATGGGTTT AATAGGAAT AAGAGTTGAA AGTCTGCAA  
CCTAGGAAAA CCCAAACCA CTCTTGTTC CTTATCATAC CTTACCTTA TTCTCAACTT TTCAAGCCTT

**FIG. 10C**

16/37

HindIII

81 TTTGTAAAAG AAAAATTG GAAAGTCACA TGTAGCAGA AGCTTCAGAC TCATTAACCT AAAAGAAGAT ATAGACTCAT  
AAACATTTC CTTTTTTAAC CTTTCAGTGT ACAATCGTCT TCGAAGTCTG AGTAATTGAA TTTCTCTTA TATCTGAGTA

161 TAACCTTTAA GAAAGATATAG ATTCCAACAC AAGTTCAAAA TTCTATAAACG TCAATCTGG CTAATTTCTT GAACATCAAT  
ATTGAAATTTC CTTCTATATC TAAGTTGTG TTCAAGTTT AAGTATTGC AGTTAGAAC GATTAAAGA CTTGTAGTTA

241 GCATTCCCTT AAAATATAGA TAATAAGTTA GGATGTGTGTC ACTTTCTAA AGCATATTCC GACTGAGTCT GGTAGAATCT  
CGTAAGGAAA TTTTATATCT ATTATTCAT CCTACACACAG TGAAAGAATT TCGTATAAGG CTGACTCAGA CCATCTTAA

321 CATAAACTTT AGGCCCTTATC TCTTCAATTAA GGCAATTACT TACCTCCGCT CTACTTTAAG AAAATTCAAT GGAGTACACC  
GTATTTGAAA TCGGAATAG AGAAGTTAAT CGTAAATTGAA ATGGAGGCCA GATGAAATTG TTTTAAGTTA CCTCATGTGG

**FIG. 12A**



17/37

- 401 ATTATTAAGT TCATAATAAAA ATAAAAATTAT ATTAAATTCTG TCTCTTGTG GTTCGGCTA TCCTTTCTG TTTCCCTGCT  
TAATAATTCA AGTATATTI TATTTTAATA TAATTAAGAC AGAGAACAC CAAGCGAGAT AGAAAAGAC AAAAGGAGA
- 481 TCAACCATAA CATATACAAG AACTACATT TCCAAGCTAG ATATATCTAA CATGACTGAC TTTGTAATT TCTTTGCAC  
AGTTGGTATT GTATATGTC TTGATGTTAAGGTTGATC TATATAGATT GTACTGACTG AAACATTAA AGAAAACGGT
- 561 AGTTAAAGAA AAAAAATGAT GTTATCCAAA TAATAAAGAG AAAGAGGCCCT AATGAAAAAA ATGATTACT ATTAGAGTTG  
TCAAATTCTT TTTTTACTA CAATAGGTT ATTATTCTC TTCTCTGGGA TTACCTTTT TACTAAATGA TAATCTCAAC
- 641 TTCAAGCTAAT CACATCAATT ATGGTTTCA TCAAGTATGA CTAATGGGG CTCTTATCTC AGCTGATGTG ACATTGAAT  
AAGTCGATTA GTGTAGTTAA TACCAAAAGT AGTTCATACT GATTACGGCC GAGAATAGAG TGCACTACAC TGAACTTTA
- PstI
- 721 TCTTTGACTT TAACACTAAT GTCATATGCT TTCAAATTAA TAATCCGATA AAGCTGCAGA CTCATTAAC TAAAAGAAGA  
AGAAAAGTCAA ATTGTGATTA CAGTATACGA AAGTTTAATT ATTAGGCTAT TTGACGTCT GAGTAATTGA ATTTCCTCT
- 801 TATAGACTICA TTAACTTAA AGAAGATATA GATTCCAACA CAAGTTCAA ATTCAAAAC GTCAATCTTG GCTAAATTTC  
ATATCTGAGT AATTGAATT TCTTCTATAT CTAAGGTTGT GTTCAAGTT TAAGTATTG CAGTTGAAC CGATTAAAG
- 881 TGAACATCAA TGCATTCCCTT TAAATATAG ATAATAAGT AGGATGTTG CACTTCTTA AAGCATATTG CGACTGAGTC  
ACTTGTAGTT ACGTAAAGGAA ATTTCATATC TATTATCAA TCTCACAAACAA GTGAAAGAAT TTCGTATAAG GTGACTCAG
- 961 TGGTAGAATC TCATAAACTT TAGGCCCTAT CTCTCAATT AGGCAATTAC TTACCTCCGC TCTACTTTAA GAAAATTCAA  
ACCATCTTAG AGTATTGAA ATCCGGAATA GAGAAGTTAA TCGTTAATG AATGGAGGC AGATGAAATT CTTTTAAGTT

FIG. 12B



1041 TGGAGTACAC CATTATTAAG TTCAATATAA AATAAAATTA TATTAATTCT GTCTCTGTT GGTTCGCTCT ATCTTTTCT  
ACCTCATGTG GTAATATTCA AGTATATT TTATTTAAT ATAATTAAGA CAGAGAACAA CCAAGGAGA TAGAAAAAGA

1121 GTTCTCCCTGC TTCAACCATA ACATATACAA GAACTACATT TTCCAAGCTA GATATATCTA ACATGACTGA CTCTGTAAT  
CAAAGGACG AAGTTGGTAT TGTATATGTT CTTGATGTAA AAGGTTCGAT CTATATAGAT TGACTGACT GAAACATTAA

1201 TTCTTTGCC AAGTTAAAGA AAAAAAATGA TGTTATCCAA ATAATAAAGA GAAAGAGCCC TAATGAAAAA ATGATTAC  
AAGAAAACGG TTCAATTCTC TTTTTTACT ACAATAGGT TATTATTCT CTTCTCGGG ATTACTTTT TTACTAAATG

1281 TATTAGAGTT GTTCAGCTAA TCACATCAAT TATGGTTTTC ATCAAGTATG ACTAATGGCG GCTCTTATCT CACGTGATGT  
ATAATCTCAA CAAGTCGATT AGTGTAGTTA ATACAAAAG TAGTTCATAC TGATTACCGC CGGAATAGA GTGCACTACA

1361 GACATTGAAA TTCTTGACT TTAACACTAA TGTCAATATGC TTTCAAATTAA ATAATCCGAT AAAGTCTGCT AACATGTGAC  
CTGTAACCTT AAGAAACTGA AATTGTGATT ACAGTATACG AAAGTTTAAT TATTAGGCTA TTGTCAGACGA TTGTACACTG

1441 TTCCAAATT TTTCCTTTA CAAATTGCAG ACTTTCAAC TCTTATTCCC TATTAAACC CATCCATACT ATTCCCTTGT  
AAAGGTTAA AAAAGAAAAT GTTAACTGC TGAAAAGTTG AGAATAAGGG ATAATTGG GTAGGTATGA TAAGGAACAA

BamHI

1521 TCTCACAAA ACCCAAAAGG ATCC Seq. ID No. 11  
AGAGTGGTTT TGGTTTTCC TAGG Seq. ID No. 12

FIG. 12C

18/37



19/37

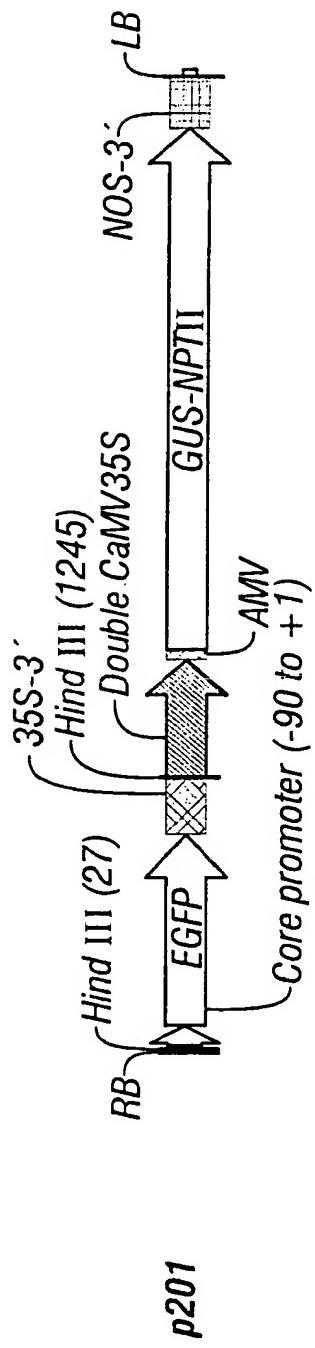


FIG. 13A

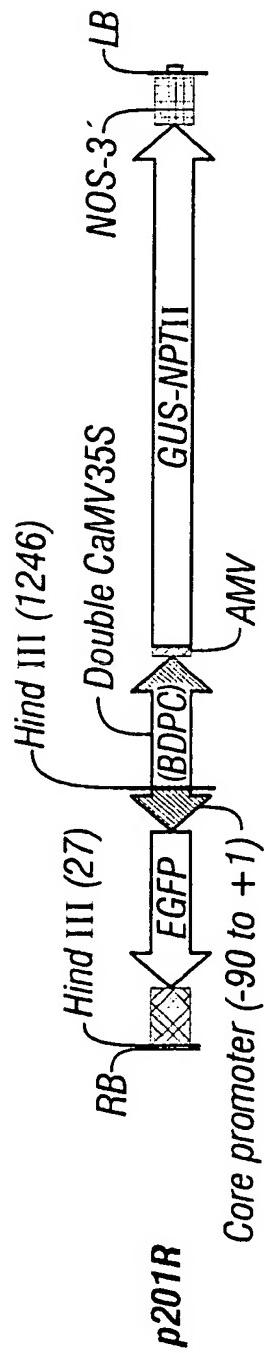
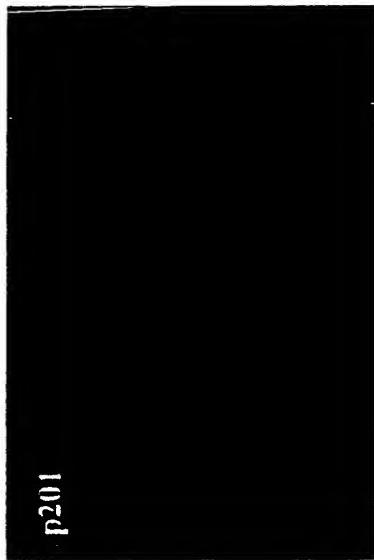


FIG. 13B



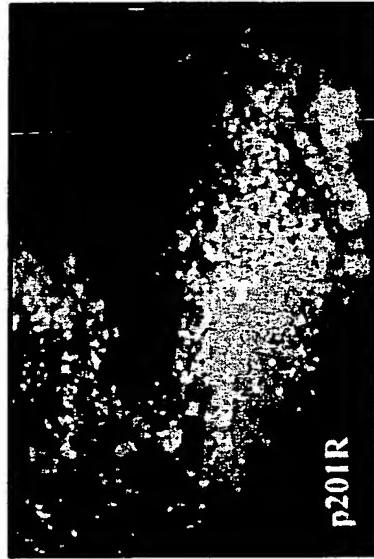
20/37

p201

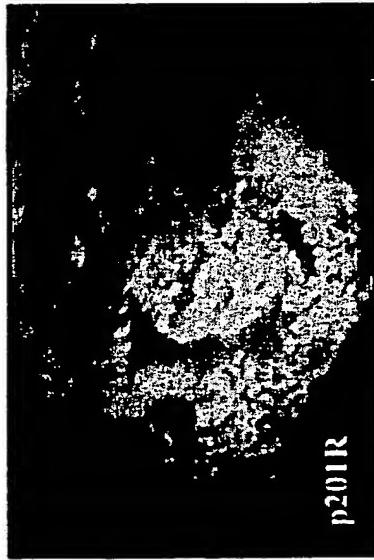


*FIG. 14A*

*FIG. 14B*



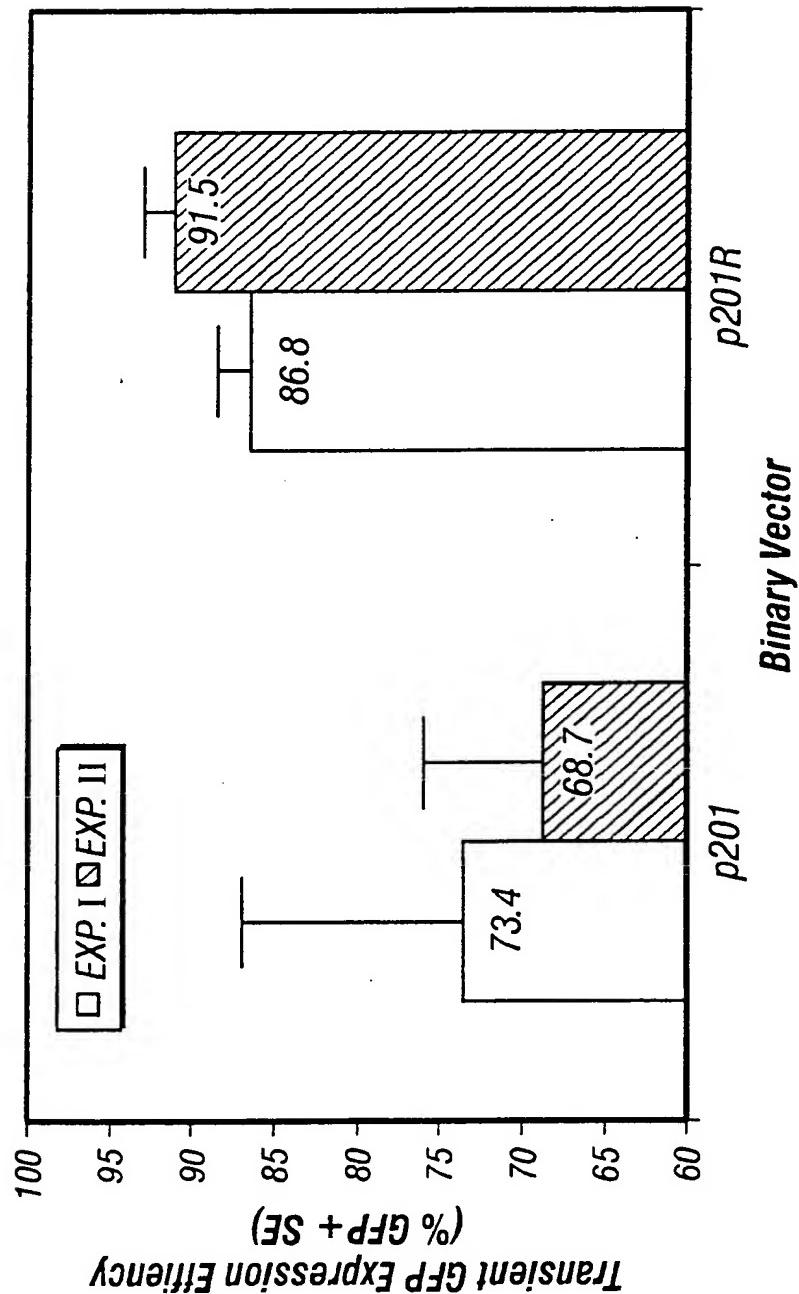
*FIG. 14C*



*FIG. 14D*



21/37





22/37

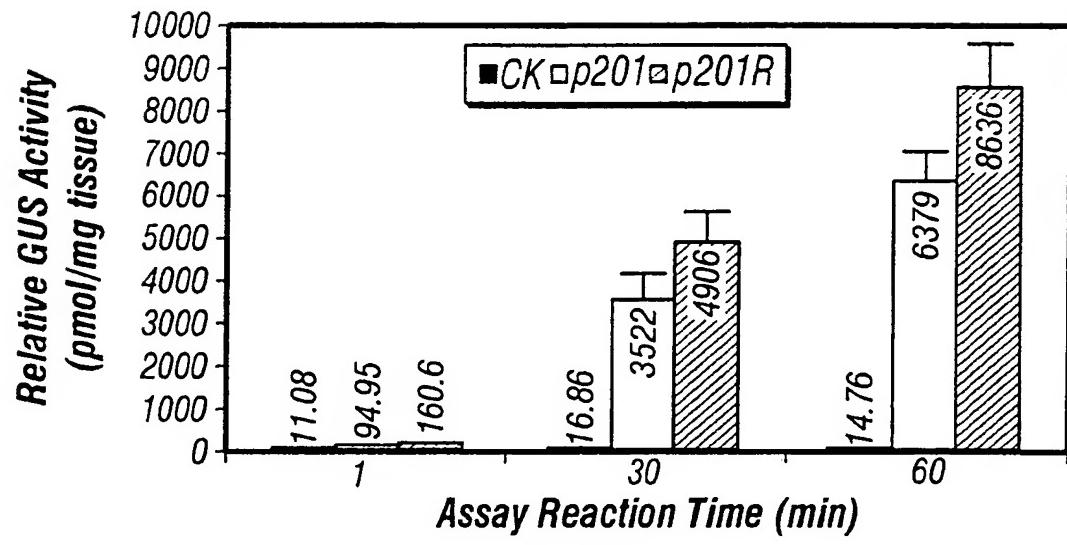


FIG. 16A

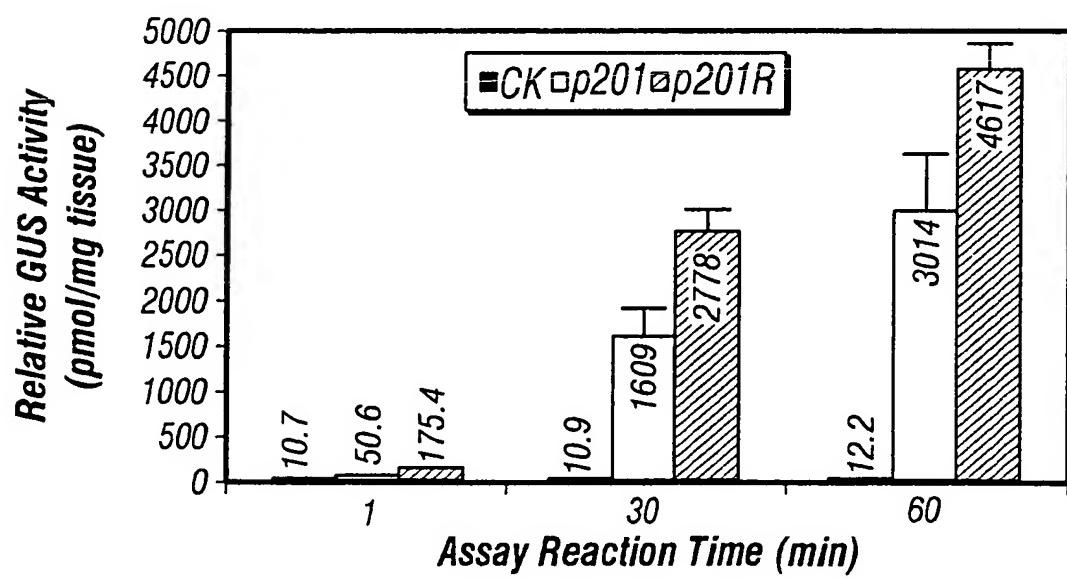
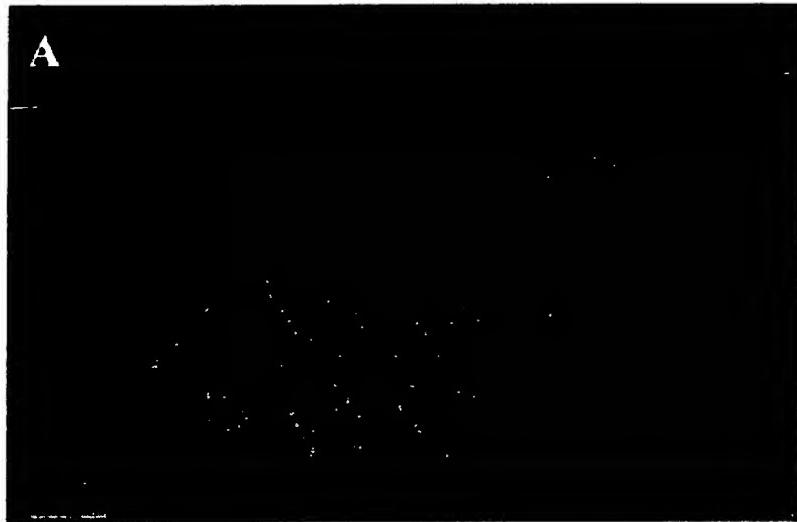


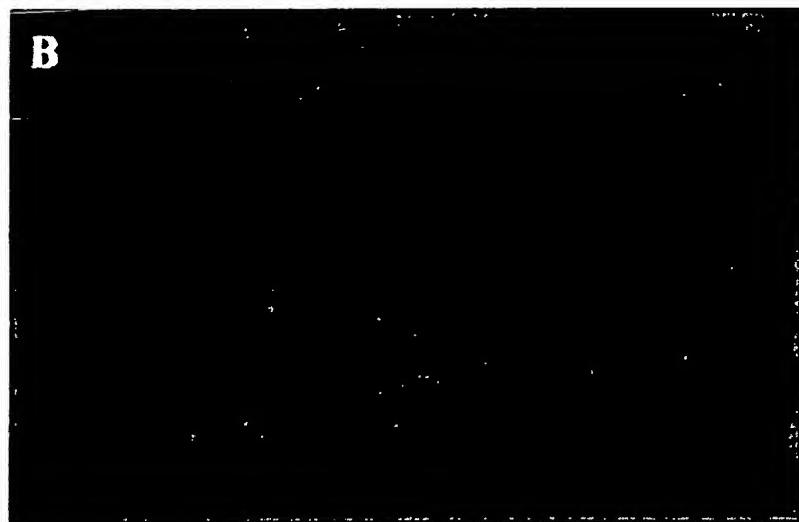
FIG. 16B



23/37



*FIG. 17A*



*FIG. 17B*



24/37

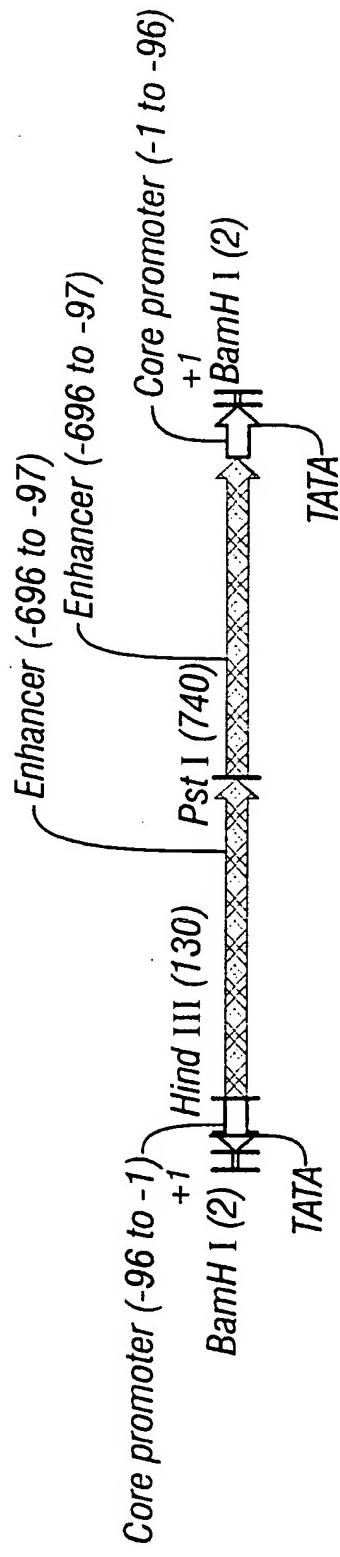


FIG. 18

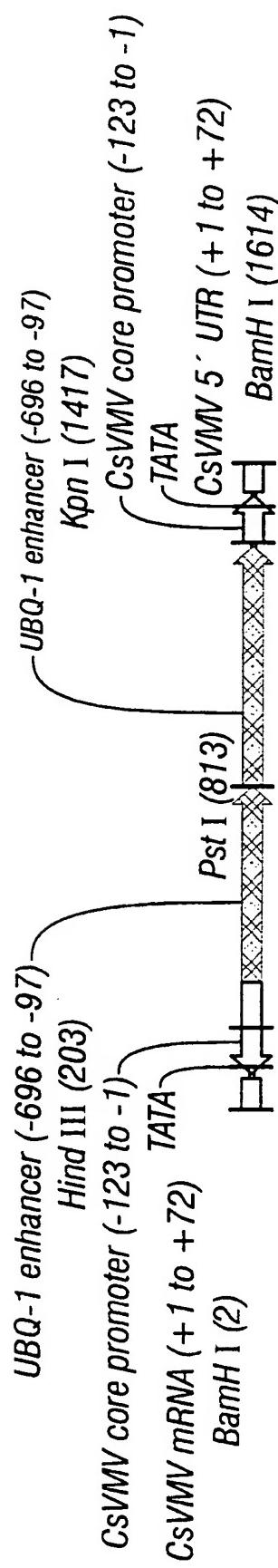
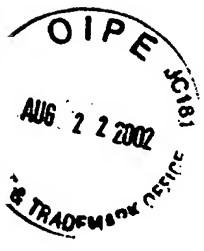


FIG. 20



25/37

BamHI

1 GGATCCCTT TGTGTTCGT CTTCTCAC GTAGAAACCC TAAACAAGGA GGAGGGGGT TTATATATGT CAATGTACGC  
CCTAGGGAAA ACACAAAGCA GAAGGAGGT CATCTTGGG ATTTGTCCT CCTCCGCCA AATATATACA GTTACATGCG

HindIII

81 GTCTAGGGTT TTGCTTAATAT TGGGCTAGGT TACAGGCCCT TACCCACAAA GCTTAGTTGA TAAAATATT TTATTTGGTT  
CAGATCCCAA ACGATTATA ACCGATCCA ATGTCGGAA ATGGTGTGTT CGAATCAACT ATTTTATAAA ATAAACCAA

161 GTAATTTGT AATATCCGG GATATTTCAC AAATTGAACA TAGACTACAG AATTTTAGAA AACAAACCTT CTCTCTCTTA  
CATTAACAA TTATAGGCC CTATAAGTG TTAACCTGT ATCTGATGTC TTAAATCTT TTGTTGAAA GAGAGAGAAT

241 TCTCACCTT ATCTTTAGA GAGAAAAGT TCGATTCCG GTTGACCGGA ATGTATCTT GTTTTTTG TTTTGTAA  
AGAGTGGAAA TAGAAAATCT CTCTTTCA AGCTAAAGGC CAACTGGCT TACATAGAAA CAAAAAAC AAAACATTGT

321 TATTCGTTT TCGGATTAG ATCGGATCTC CTTTCGTT TTGTCGGACC TTCTCCGGT TTATCCGGAT CTAATAATAT  
ATAAAAGCAA AGCTAAATC TAGCTAGAG GAAAAGCCAA AACAGGCCG AAGAAGGCCA AATAGGCCA GATTATTATA

401 CCATCTTGA CTTAGCTAAG TTTGGATCTG TTTTTGGTT AGCTCTTGTCA AATCGCCTCA TCATCAGCAA GAAGGTGAAA  
GGTAGAATCT GAATCGATC AAACCTAGAC AAAAACCAA TCGAGAACAG TTAGCGGAGT AGTAGTCGTT CTTCCACTT

481 TTTTGACAA ATAAATCTTA GAATCATGTA GTGTCTTGG ACCTTGGAA TGATAGAAC GATTTGTTAT AGCTACTCTA  
AAAAACTGTT TATTTAGAAT CTTAGTACAT CACAGAAACC TGGAACCCCT ACTATCTTGG CTAACAAATA TCGATGAGAT

FIG. 19A



26/37

561 TGTATCAGAC CCTGACCAAG ATCCACAAT CTCATAGGTT TTGTCATAT GAAACCTCG ACTAACGAGA AGTGGTCTT  
ACATAGTCTG GGACTGGTTC TAGGTT GAGTATCCA AACAGTATA CTTTGGAAAGC TGATTGCTCT TCACCAGAAA

641 TAATGAGAGA GATATCTAA ATGTTATCTT AAAAGCCCAC TCAAATCTCA AGGCATAAGG TAGAAATGCA AATTTGGAAA  
ATTACTCTCT ATAGATT TACAATAGAA TTTTCGGGTG AGTTTAGAGT TCCGTTATCC ATCTTACGT TAAACCTTT

PstI

721 GTGGGCTGGG CCTCTCTGCAG TTGATAAAAT ATTTTATTG GGTGTAATT TTGTAATTC CCGGGATATT TCACAAATTG  
CACCCGACCC GGAGAGACGTC AACTATTTA TAAAATAAA CCAACATTA AACATTATAA AACATTATAA AGTGTGTTAAC

801 AACATAGACT ACAGAAATTG AGAAAAACAAA CTTTCTCTCT CTTATCTCAC CTTTATCTT TAGAGAGAAA AAGTTCGATT  
TTGATCTGA TGCTCTAAAT TCTTTGTTT GAAAGAGAGA GAATAGAGTG GAAATAGAAA ATCTCTCTT TTCAAGCTAA

881 TCCGGTTGAC CGGAATGTAT CTTTGTATTT TTTGGTTTGT AACATATTTC GTTTCCGAT TTAGATGGAA TCTCCCTTTTC  
AGGCCAACTG GCCTTACATA GAAACAAAAA AAACAAAACA TTGTATAAAG CAAAGGCTA AATCTAGCCT AGAGGAAAAG

961 CGTTTTGGCG GACCTCTTC CGGTTTATCC GGATCTAATA ATATCCATCT TAGACTTAGC TAAGTTGGAA TCTGTGTTTTT  
GCAAAACAGC CTGGAAAGG GCCAAATAGG CCTAGATTAT TATAGGTAGA ATCTGAATCG ATTCAAAACCT AGACAAAAAA

1041 GGTTAGCTCT TGTCAATCGC CTCATCATCA GCAAGAAGGT GAAATTGTTG ACAATAAAAT CTTAGAATCA TGTAGTGTCT  
CCAATCGAGA ACAGTTAGCG GAGTAGTAGT CGTTCTCCA CTTTAAACAC TGTTTATTA GAATCTTAGT ACATCACAGA

1121 TTGGACCTTG GGAATGATAG AAACGGATTG TTATAGCTAC TCTATGTATC AGACCTGAC CAAGATCCAA CAATCTCATA  
AACCTGGAAC CCTTACTATC TTTGCTAAC AGATACATAG TCTGGGACTG GTTCTAGGTT GTTAGAGTAT

FIG. 19B



27/37

1201 GGTTTGTGC ATATGAAACC TTGGACTAAC GAGAAGTGGT CTTTTAATGA GAGAGATATC TAAAATGTTA TCTTAAAGC  
CCAAAACACG TATACTTTGG AAGCTGATTG CTCTTCACCA GAAAATTACT CTCTCTATAG ATTTACAAAT AGAATTTTCG

1281 CCACTCAAAT CTCAGGGCAT AAGGTAGAAA TGCAAATTGG GAAAGTGGGC TGGGCCTTT GTGGTAAGG CCTGTAACCT  
GGTGAGTTA GAGTTCGGTA TTCCATCTT ACGTTAAAC CTTTCACCCG ACCGGAAAA CACCATTTCC GGACATTGGA

1361 AGCCCCAATAT TAGCAAACC CTAGACCGGT ACATTGACAT ATATAAACCC GCCTCCCT TGTTAGGGT TTCTACGTGA  
TCGGGTTATA ATCGTTTTGG GATCTGGCA TGTAACTGTA TATATTGGG CGGAGGAGGA ACAAAATCCC AAGATGCACT

BamHI

1441 GAGAAGACGA AACACACAAAG GATCC Seq. ID No. 13  
CTCTCTGCT TTGTGTTTC CTAGG Seq. ID No. 14

FIG. 19C

BamHI

1 GGATCCACAA ACTTACAAAT TTCTCTGAAG TTGTATCCTC AGTACTTCAA AGAAAATAGC TTACACCAA TTTTTCTTG  
CCTAGGTGTT TGAATGTTA AAGAGACTTC AACATAGGAG TCATGAAGTT TCTTTTATCG AATGTGGTTT AAAAAGAAC

81 TTTTCACAAA TGCCGAACCTT GGTTCCCTTAT ATAGGAAAC TCAAGGGCAA AAATGACACG GAAAATATA AAAGGATAAG  
AAAAGTGTGTT ACGGCTTGGAA CCAAGGAATA TATCCTTTG AGTTCCCGTT TTTACTGTGC CTTTTATAT TTTCCCTATTC

FIG. 21A



28/37

HindIII

- 161 TAGTGGGAA TAAGATTCC TTGTGATAAG GTTACTTCC GAAGCTTAGT TGATAAAA TTTTATTTG GTTGTAAATT  
ATCACCCCCCT ATCTAAGGA AACACTATT CAATGAAAGG CTCGAATCA ACTATTTAT AAAAATAAAC CAACATTAAC
- 241 TGTAATATCC CGGGATATT CACAAATTGA ACATAGACTA CAGAATTTTA GAAAACAAAC TTATCTCCTC TTATCTCACC  
ACATTATAGG GCCCTATAAA GTGTAACT TGTATCTGAT GTCTTAAAG CTTTGTGTTG AAAGAGAGAG AATAGAGTGG
- 321 TTTATCTTT AGAGAGAAA AGTTCGATT CCGGTTGACC GGAAATGTATC TTTGGTTTTTG TGTTTGTAA ACATATTTCG  
AAAATAGAAA TCCTCTTTT TCAAGCTAAA GGCCAACCTGG CCCTTACATAG AAACAAAAAA AACAAACAT TGTTAAAGC
- 401 TTTTCCGATT TAGATCGGAT CTCCCTTTCC GTTTTGTGG ACCTCTTCC GGTTTATCC GATCTAATAA TATCCATCTT  
AAAAGGCTAA ATCTAGCCTA GAGGAAAAGG CAAAACAGCC TGGAAGAAGG CCAAATAGGC CTAGATTATT ATAGGTAGAA
- 481 AGACTTAGCT AAGTTGGAT CTGTTTTTG GTTAGCTCTT GTCAATCGCC TCATCATCAG CAAGAAGGTG AAATTTTGA  
TCTGAATCGA TTCAAACCTA GACAAAAAAC CAATCGAGAA CAGTTAGGG AGTAGTAGTC GTTCTTCCAC TTAAAAAAACT
- 561 CAAATAAAC TTAGAATCAT GTAGTGTCTT TGGACCTTGG GAATGATAGA AACGAATTGT TATAGCTACT CTATGTATCA  
GTTTATTAG AATCTTAGTA CATCACAGAA ACCTGGAAACC CTTAATCTT TTGCTAAACA ATATCGATGA GATACATAGT
- 641 GACCCCTGACC AAGATCCAAC AATCTCATAG GTTTTGTGCA TATGAAACCT TCGACTAACG AGAAGTGGTC TTTTAATGAG  
CTGGGACTGG TTCTAGGTTG TTAGAGTATC CAAAACACGT ATACTTGGA AGCTGATTGC TCTTCACCCAG AAAATTACTC
- 721 AGAGATATCT AAAATGTTAT CTAAAGGCC CACTCAAATC TCAAGGCATA AGGTAGAAAT GCAAATTGG AAAGTGGGCT  
TCTCTATAGA TTTCACAATA GAATTTCGG GTGAGTTAG AGTTCCGTAT TCCATCTTTA CGTTAAACC TTTCACCCGA

**FIG. 21B**



PstI

- 801 GGGCCTTCTG CAGTTGATAA AATATTTTA TTTGGTTGTA ATTTGGTAAAT ATCCGGGAT ATTTCACAAA TTGAACATAG CCCGGAAGAC GTCAACTATT TTAGAAAAAT AAACCAACAT TAAACATTAA TAGGGCCCTA TAAAGTGTTC AACTTGTATC
- 881 ACTACAGAAAT TTAGAAAAC AAACCTTCTC TCTCTTATCT CACCTTTATC TTTAGAGAG AAAAGTTCG ATTTCGGTT TGATGTCTTA AAATCTTTG TTTGAAAGAG AGAGAATAGA GTGGAAATAG AAAATCTCTC TTTTCAGC TAAAGGCCAA
- 961 GACCGGAATG TATCTTTGTT TTTTTGTTT TGTAACATAT TCGTTTCC GATTAGATC GGATCTCCTT TTCCGTTTTG CTGGCCCTAC ATAGAAACAA AAAAACAA ACATTGATA AAGCAAAAGG CTAATCTAG CCTAGAGGAA AAGGCCAAAC
- 1041 TCGGACCTTC TTCCGGTTTA TCCGGATCTA ATAATATCCA TCCTTAGACTT AGCTAAGTTT GGATCTGTTT TTGGGTTAGC AGCCTGGAAG AAGGCCAAAT AGGCCTAGAT TATTATAGGT AGAATCTGAA TCGATTCAA CCTAGACAAA AAACCAATCG
- 1121 TCTTGTCAAT CGCCTCATCA TCAGCAAGAA GGTGAAATT TTGACAAATA AATCTTAGAA TCATGTAGTG TCTTTGGACC AGAACAGTTA CGGGAGTAGT AGTCGTTCTT CCACTTAA AACTGTTAT TTAGAATCTT AGTACATCAC AGAAACCTGG
- 1201 TTGGGAATGAA TAGAAACGAT TTGTTTATAGC TACTCTATGT ATCAGACCT GACCAAGATC CAACAATCTC ATAGGTTTTG AACCCCTTACT ATCTTTGCTA AACAAATATCG ATGAGATACA TAGTCTGGGA CTGGTTCTAG GTTGTAGAG TATCCAAAC
- 1281 TGCATATGAA ACCTTCGACT AACCGAAAGT GGTCTTTAA TGAGAGAGAT ATCTAAAATG TTATCTTAA AGCCCCACTCA ACGTATACTT TGGAAAGCTGA TTGCTCTCA CCAGAAAATT ACTCTCTCA TAGATTTCAC AATAGAAATT TGGGTTGAGT

29/37

KpnI

**FIG. 21C**



1361 AATCTCAAGG CATAAGGTAG AAATGCAAAT TTGGAAAGTG GGCTGGCCCT TGGTACCCGG AAAGTACACT TATCACAAAG  
TTAGAGTTCC GTATTCCATC TTTACGTTTA AACCTTCAC CGAACCGGA ACCATGGCC TTTCATGGA ATAGTGTTC

1441 GAATCTTATC CCCCACTACT TATCCTTTTA TATTTTCCG TGTCATTTT GCCCTTGAGT TTTCCATAT AGGAAGGAA  
CTTAGAATAG GGGGTGATGA ATAGGAAAAT ATAAAAAGGC ACAGTAAAAA CGGGAACTCA AAAGGATAAA TCCCTTGTT

1521 GTTCGGCATT TGTGAAAACA AGAAAAAATT TGGTGTAAAGC TATTTTCTTT GAAGTACTGA GGATACAACT TCAGAGAAAT  
CAAGCCGTAA ACACTTTGT TCTTTTAA ACCACATTG ACCACATTG ATAAAAGAAA CCTCATGACT CCTATGTTGA AGTCTCTTA

BamHI

1601 TTGTAAGTTT GTGGATCC Seq. ID No. 15  
AACATTCAAA CACCTAGG Seq. ID No. 16

30/37

FIG. 21D

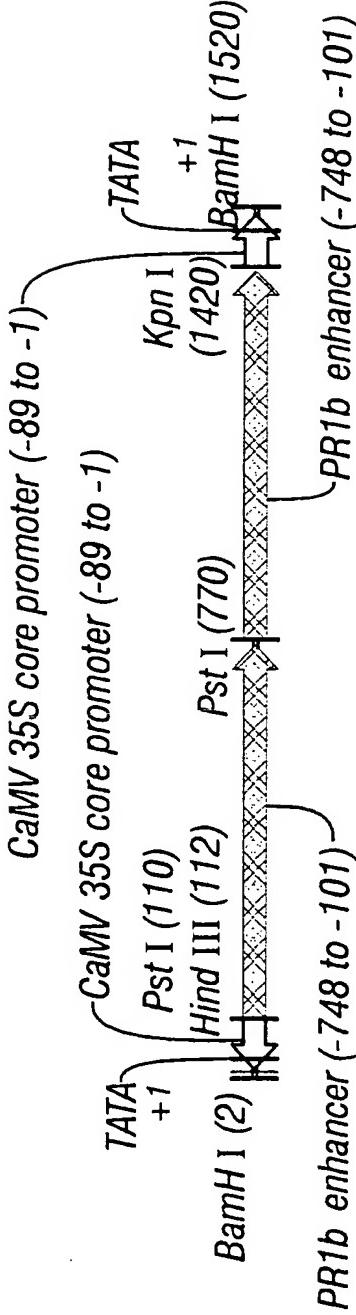


FIG. 22

BamHI

1 GGATCCAGCG TGTCCCTCC AAATGAAATG AACTTCCCTTA TATAGAGGA GGGTCTTGCG AAGGATAGTG GGATTGTCG  
CCTAGGGTCCGC ACAGGAGGG TTTACTTAC TTGAAGGAAT ATATCTCCCT CCCAGAACGC TTCTATCAC CCTAACACGC

PstI HindIII

81 TCATCCCTTA CGTCAGTGGAA GATACTGCAG AAGCTTCAGA CTCATTAAC TAAAAGAAGA TATAGACTCA TTAACTTAAA  
AGTAGGGAAAT GCAGTCACCT CTATGACGTC TTGAGTCT GAGTAATTGA ATTTCCTCT ATATCTGAGT AATTGAATT

161 AGAAGATATA GATTCCAACA CAAGTTCAA ATTCAAAAC GTCAATCTTG GCTAAATTTC TGAAACATCAA TGCAATTCCCT  
TCTTCTATAT CTAAGGTTGT GTTCAAGTTT TAAGTATTG CAGTTAGAAC CGATTAAAG ACTTGTAGTT AGCTAAGGAA

241 TAAAATATAG ATAATAAGTT AGGATGTTGT CACTTCTTA AAGCATATTG CGACTGAGTC TGGTAGAAC TCAATAACCTT  
ATTTTATATC TATTATTCAA TCCTACAACA GTGAAAAGAAT TTGTATAAG GCTGACTCG ACCATCTTAG AGTATTGAA

321 TAGGCCTTAT CTCCTCAATT AGGCCAATTAC TTACCTCCGC TCTACTTTAA GAAAATTCAA TGGAGTACAC CATTATTAAG  
ATCCGGATA GAGAAGTTAA TCCGTTAATG AATGGAGGGCG AGATGAAATT CTTTAAGTT ACCTCATGTG GTAATAATTC

401 TTCATATAAA AATAAAATTAA TATTAATTCT GTCTCTGTGTT GGTTCTGCCT ATCTTTTCT ATCTTCGCTCT  
AAGTATATT TTATTTAAAT ATAATTAAAGA CAGAGAACAA CCAAGGGAGA TAGAAAAAGA CAAAAGGACG AAGTTGGTAT

481 ACATATACAA GAACTACATT TTCCAAGGCTA GATATACTA ACATGACTGA CTTTGTAAT TTCTTTGCC AAGTTAAAGA  
TGTATATGTT CTGATGTTA AAGGTTCGAT CTATATAGAT TGTACTGACT GAAACATTTA AAGAAAAGCC TTCAAATTCT

31/37

FIG. 23A



561. AAAAATG A GTT TAT CCA ATAATAAAGA GAAAGGCC TAATGAAAAA AATGATTAC TATTAGAGTT GTTCAGCTAA  
TTTTTTACT ACAATAGGT TATTATTTCT CTTTCTCGGG ATTACCTTTT TTACTAAATG ATAATCTAA CAAGTCGATT

641 TCACATCAA T ATGGTTTC ATCAAGTATG ACTAATGGCG GCTCTTATCT CACGTGATGT GACATTGAAA TTCTTTGACT  
AGTAGTTA ATACCAAAAG TAGTTCAAC TGATTACCGC CGAGAATAGA GTGCACTACA CTGTAACCTT AAGAAAACCTGA

32/37

PstI

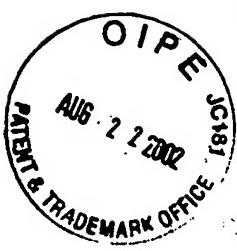
721 TTAACACTAA TGT CATATGC TTTCAAATTA ATAATCCGAT AAAGCTGCAG ACTCATTAAC TTAAAAGAAG ATATAGACTC  
AATTGTGATT ACAGTATACG AAAGTTTAAT TATTAGGCTA TTTCGACGTC TGAGTAATTG AATTTCCTTC TATATCTGAG

801 ATTAACCTAA AAGAAGATAT AGATTCCAAC ACAAGTTCAA AATTCTAA CGTCAATCTT GGCTAAATT CTGAACATCA  
TAATTGAAATT TTCTTCTATA TCTAAGGTTG TGTTCAGTT TTAAGTATTG GCAGTTAGAA CCGATTAAA GACTTGTAGT

881 ATGCATTCCCT TTAAAATATA GATAATAAGT TAGGATGTTG TCACTTTCTT AAAGCATATT CCGACTGAGT CTGGTAGAAT  
TACGTAAGGA AATTTTTATAT CTATTATTCA ATCCTACAAAC AGTGAAGAA TTTCGTATAA GGCTGACTCA GACCATCTTA

961 CTCATAACT TTAGGCCTTA TCTCTTCAAT TAGGCAATTA CTTACCTCCG CTCTACTTTA AGAAAATTCA ATGGAGTACA  
GAGTATTGA AATCCGGAAT AGAGAAGTTA ATCCGTTAAT GAATGGGGC GAGATGAAAT TCTTTAAGT TACCTCATGT

1041 CCATTATCAA GTTCATATAA AAATAAAATT ATATTAATTCTTG TGTCCTGCTC TATCTTTCTC TGTTTCGCTC TACCTTAAAG  
GGTAATAATT CAAGTATATT TTTATTTAA TATAATTAAAG ACAGAGAACCA ACCAAGCGAG ATAGAAAAG ACAAAGGAC



1121 CTTCAACCAT AACATATACA AGAACTACAT TTTCCAAGCT AGATATACT AACATGACTG ACTTTGAAA TTTCCTTTGC  
GAAGTTGGTA TTGTATATGT TCTTGATGTA AAAGGTTCGA TCTTATAGA TTGTAATGAC TGAAACATT AAAGAAAACG

1201 CAAGTTAAAG AAAAAAATG ATGTTATCCA AATAATAAG AGAAAGAGCC CTAATGAAAA AAATGATTAA CTATTAAGAT  
GTTCAATTTC TTTTTTTAC TACAATAGGT TTATTATTC TCCTTCTCGG GATTACTTT TTACTAAAT GATAATCTCA

1281 TGTTCAGCTA ATCACATCAA TTATGGTTT CATCAAGTAT GACTAATGGC GGCTCTTATC TCACGTGATG TGACATTGAA  
ACAAGTCGAT TAGTGTAGTT AATACCAAA GTAGTTCATC CTGATTACCG CCGAGAATAG AGTGCACAC ACTGTAACCT

KpnI

1361 ATTCTTGAC TTTAACACTA ATGTCATATG CTTTCAAATT AATAATCCGA TAAAGGTAC TATCTCACT GACGTAAGGG  
TAAGAAACTG AAATTGTGAT TAGTGTATAC GAAAAGTTAA TTATTAGGT ATTTCCATGG ATAGAGGTGA CTGGATTCCC

BamHI

1441 ATGACGCCACA ATCCCCACTAT CCTTCGCAAG ACCCTTCCTC TATATAAGGA AGTTCATTC ATTTGGAGAG GACACGGCTGG  
TACTGCGTGT TAGGGTGATA GGAAGCGTTT TGGGAAGGGAG ATATATTCCCT TCAAGTAAG TAAACCTCTC CTGTGCGACC

BamH

1521 ATCC Seq. ID No. 17  
TAGG Seq. ID No. 18

33/37

FIG. 23C



34/37

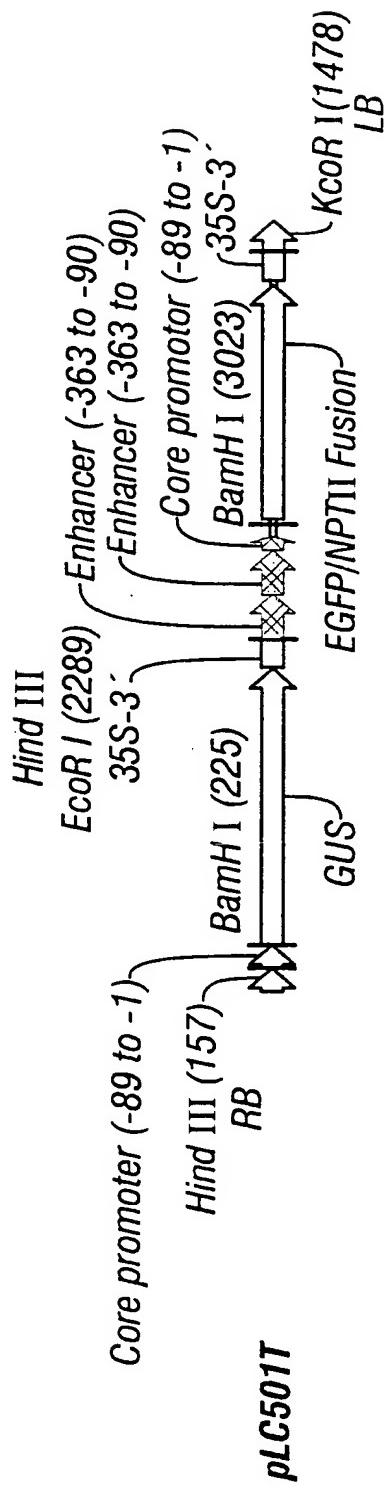


FIG. 24A

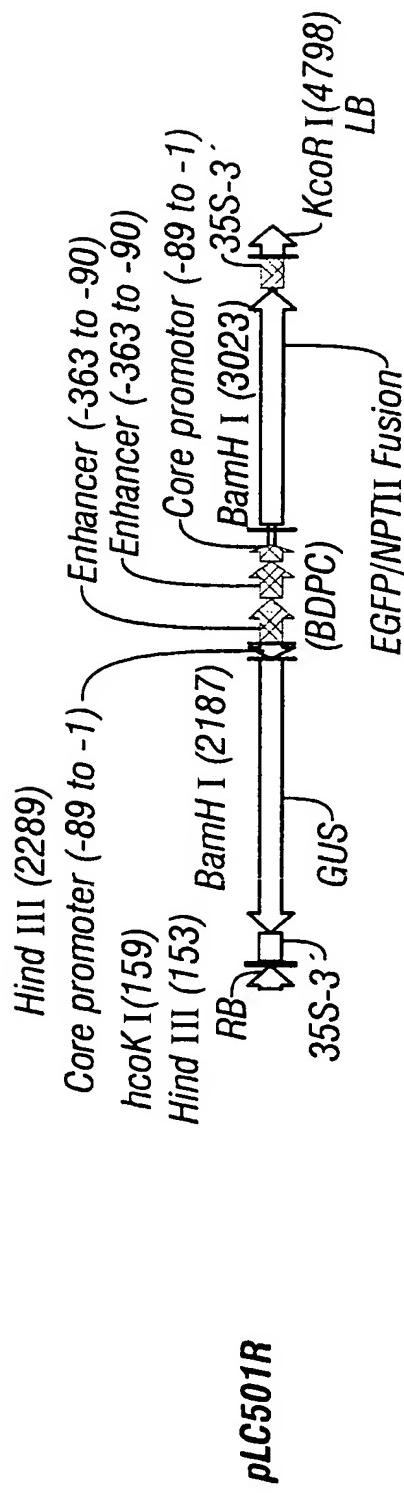


FIG. 24B



35/37

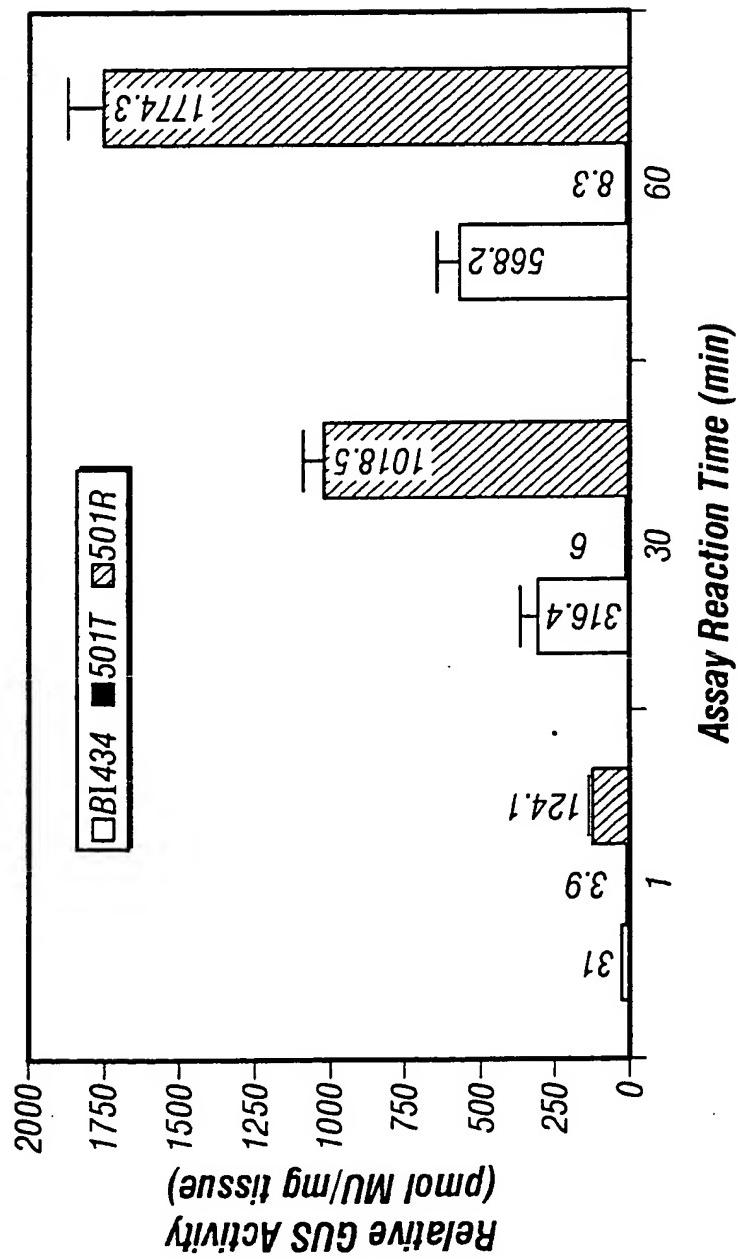


FIG. 25



36/37

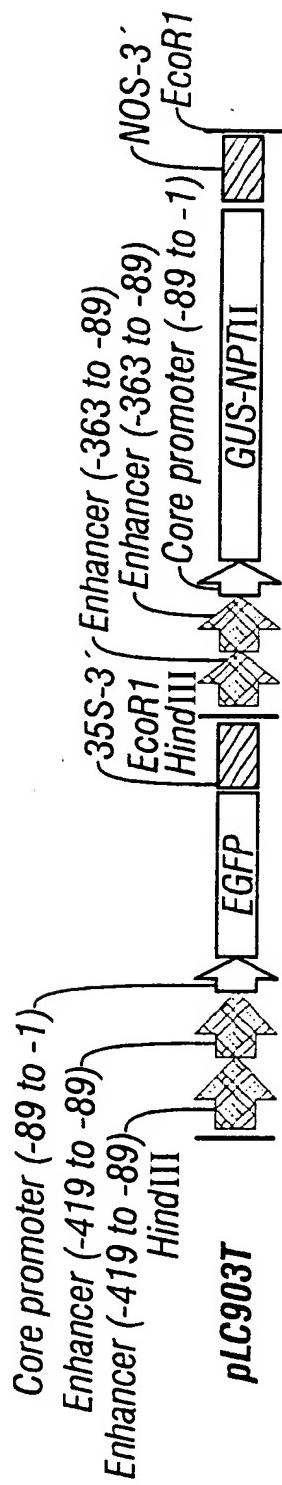


FIG. 26A

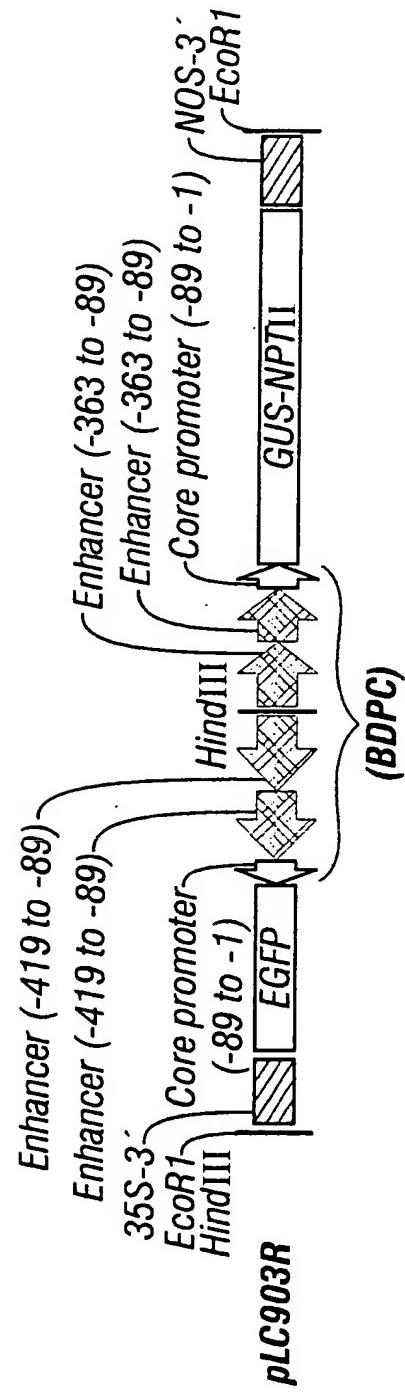


FIG. 26B



37/37

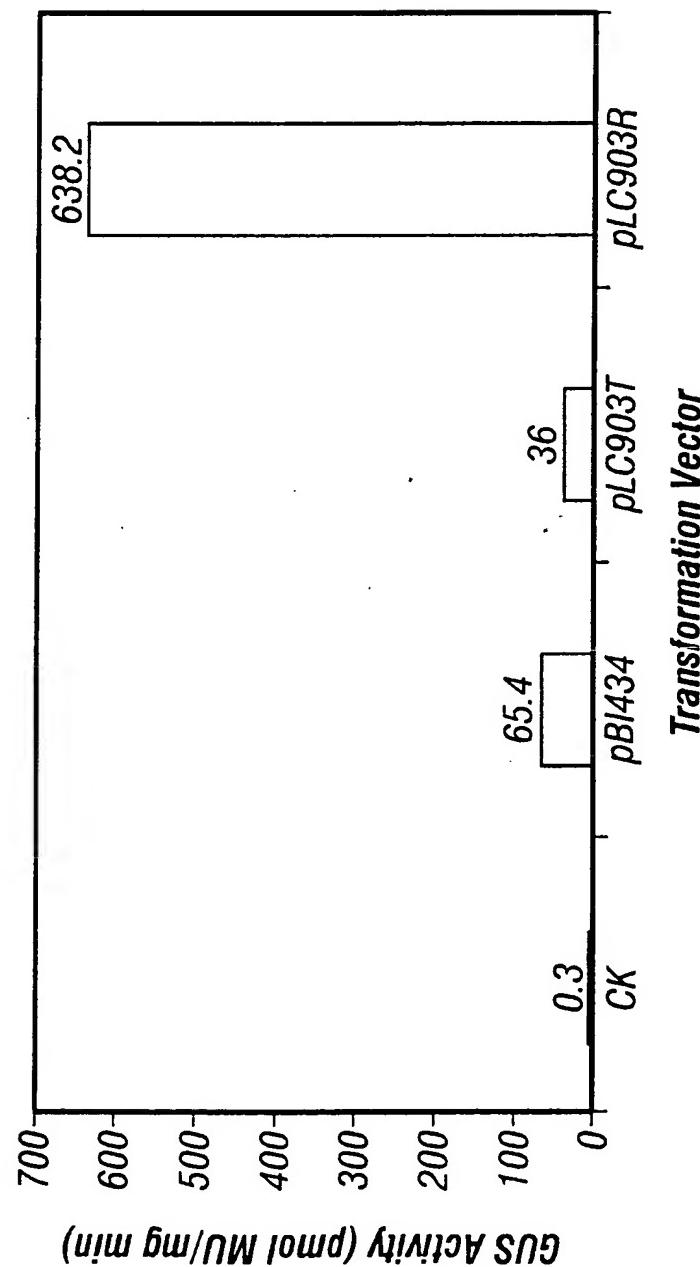


FIG. 27

*Transformation Vector*